



PJU50N10L / PJD50N10L

100V N-Channel Enhancement Mode MOSFET

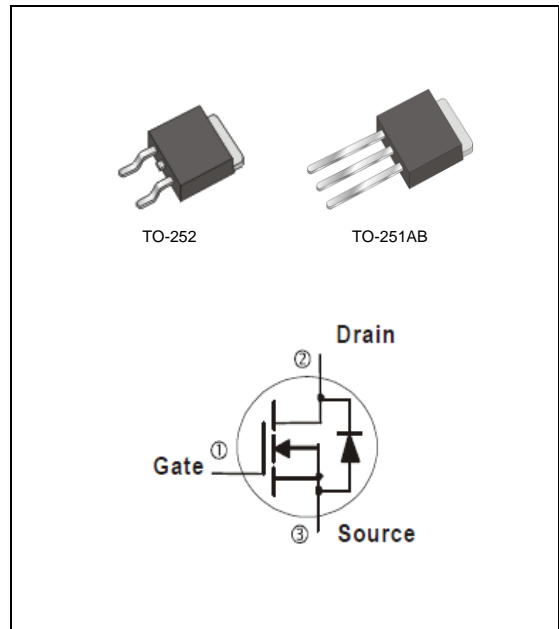
Voltage 100 V **Current** 50 A

Features

- $R_{DS(ON)}$, $V_{GS}@10V, I_D@30A < 22m\Omega$
- High switching speed
- Improved dv/dt capability
- Low reverse transfer capacitance
- Lead free in compliance with EU RoHS 2011/65/EU directive.
- Green molding compound as per IEC61249 Std. (Halogen Free)

Mechanical Data

- Case : TO-251AB, TO-252 Package
- Terminals : Solderable per MIL-STD-750, Method 2026
- TO-251AB Approx. Weight : 0.0104 ounces, 0.297grams
- TO-252 Approx. Weight : 0.0104 ounces, 0.297grams



Maximum Ratings and Thermal Characteristics ($T_A=25^\circ\text{C}$ unless otherwise noted)

PARAMETER		SYMBOL	LIMIT	UNITS
Drain-Source Voltage		V_{DS}	100	V
Gate-Source Voltage		V_{GS}	+20	V
Continuous Drain Current	$T_C=25^\circ\text{C}$	I_D	50	A
	$T_C=100^\circ\text{C}$		32	
Pulsed Drain Current	$T_C=25^\circ\text{C}$	I_{DM}	100	
Power Dissipation	$T_C=25^\circ\text{C}$	P_D	96	W
	$T_C=100^\circ\text{C}$		38	
Continuous Drain Current	$T_A=25^\circ\text{C}$	I_D	8	A
	$T_A=70^\circ\text{C}$		6.5	A
Power Dissipation	$T_A=25^\circ\text{C}$	P_D	2.5	W
Power Dissipation	$T_A=70^\circ\text{C}$		1.6	
Single Pulse Avalanche Energy ^(Note 1)		E_{AS}	80	mJ
Operating Junction and Storage Temperature Range		T_J, T_{STG}	-55~150	$^\circ\text{C}$
Typical Thermal Resistance	Junction to Case	$R_{\theta JC}$	1.3	$^\circ\text{C/W}$
	Junction to Ambient	$R_{\theta JA}$	50 ^(Note 1)	

- Limited only By Maximum Junction Temperature



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Electrical Characteristics ($T_A=25^\circ\text{C}$ unless otherwise noted)

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNITS
Static						
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V, I_D=250\mu A$	100	-	-	V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	2.5	3.57	4.5	V
Drain-Source On-State Resistance	$R_{DS(on)}$	$V_{GS}=10V, I_D=30A$	-	18.3	22	m Ω
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=80V, V_{GS}=0V$	-	0.01	1.0	μA
Gate-Source Leakage Current	I_{GSS}	$V_{GS}=\pm 20V, V_{DS}=0V$	-	± 10	± 100	nA
Dynamic (Note 5)						
Total Gate Charge	Q_g	$V_{DS}=50V, I_D=30A,$ $V_{GS}=10V$ (Note 2,3)	-	29	-	nC
Gate-Source Charge	Q_{gs}		-	9.5	-	
Gate-Drain Charge	Q_{gd}		-	10	-	
Input Capacitance	C_{iss}	$V_{DS}=15V, V_{GS}=0V,$ $f=1.0\text{MHz}$	-	1643	-	pF
Output Capacitance	C_{oss}		-	257	-	
Reverse Transfer Capacitance	C_{rss}		-	63	-	
Turn-On Delay Time	$t_{d(on)}$	$V_{DD}=50V, I_D=30A,$ $V_{GS}=10V, R_G=3\Omega$ (Note 2,3)	-	19	-	ns
Turn-On Rise Time	t_r		-	56	-	
Turn-Off Delay Time	$t_{d(off)}$		-	25	-	
Turn-Off Fall Time	t_f		-	13	-	
Drain-Source Diode						
Maximum Continuous Drain-Source Diode Forward Current	I_S	---	-	-	50	A
Diode Forward Voltage	V_{SD}	$I_S=1A, V_{GS}=0V$	-	0.67	1.0	V
Reverse Recovery Time	t_{rr}	$V_{GS}=0V, I_S=20A$	-	31	-	ns
Reverse Recovery Charge	Q_{rr}	$di_F/dt=100A/\mu s$ (Note 2)	-	38	-	μC

NOTES :

1. The test by surface mounted on 1 inch FR4 board with 2oz copper.
2. $L=0.1\text{mH}, I_{AS}=40A, V_{DD}=25V, V_{GS}=10V, R_G=25\text{ohm},$ Starting $T_J=25^\circ\text{C}$
3. The Power dissipation is limit by 150°C junction temperature.
4. Pulse width $\leq 300\mu s,$ Duty cycle $\leq 2\%$
5. Guaranteed by design, not subject to production testing



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TYPICAL CHARACTERISTIC CURVES

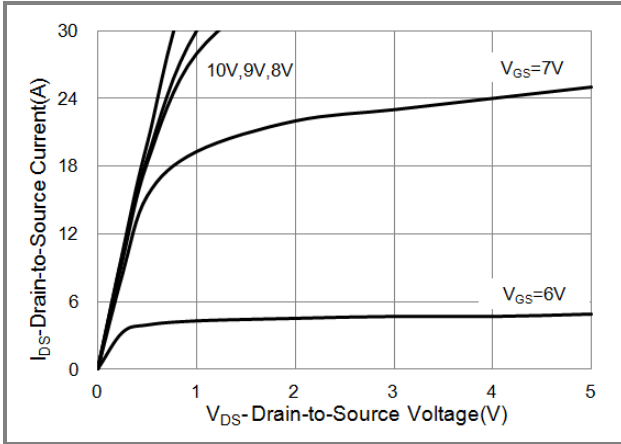


Fig.1 Output Characteristics

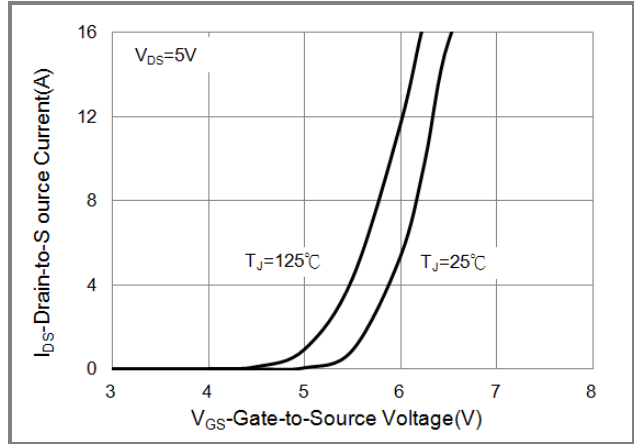


Fig.2 Transfer Characteristics

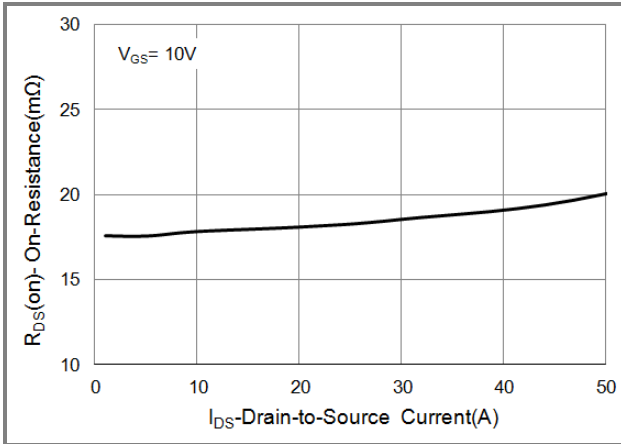


Fig.3 On-Resistance vs. Drain Current

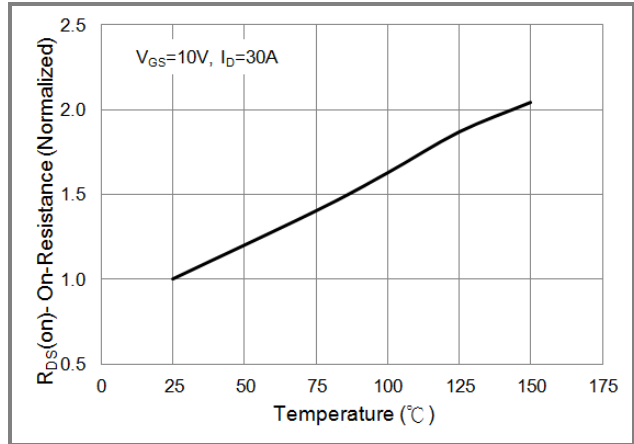


Fig.4 On-Resistance vs. Junction temperature

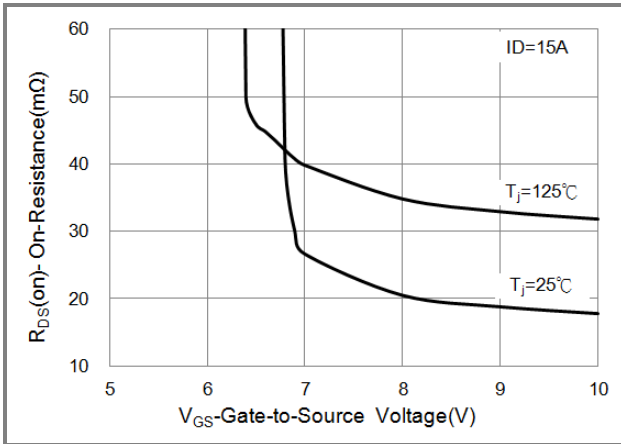


Fig.5 On-Resistance Variation with VGS.

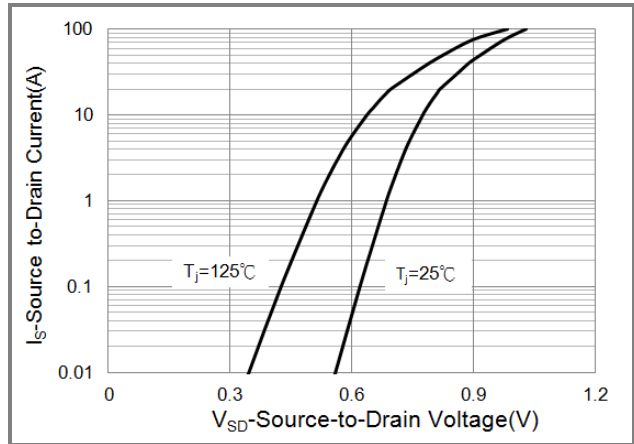


Fig.6 Source-Drain Diode Forward Voltage



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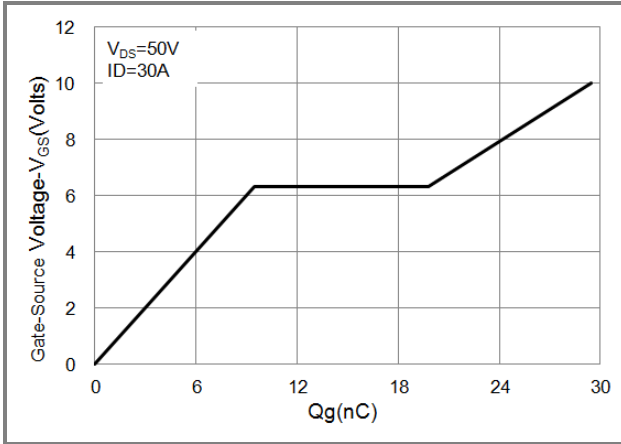


Fig.7 Gate-Charge Characteristics

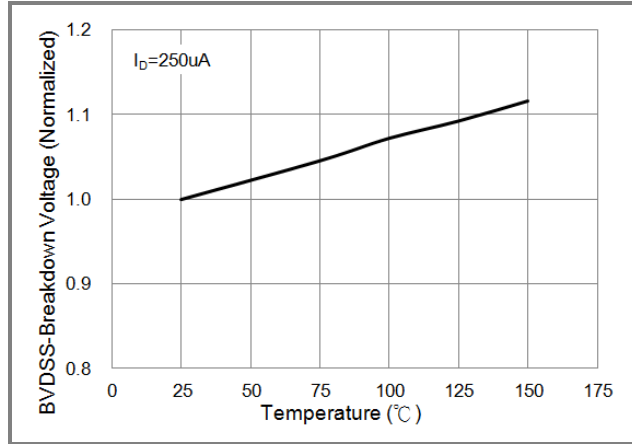


Fig.8 Breakdown Voltage Variation vs. Temperature

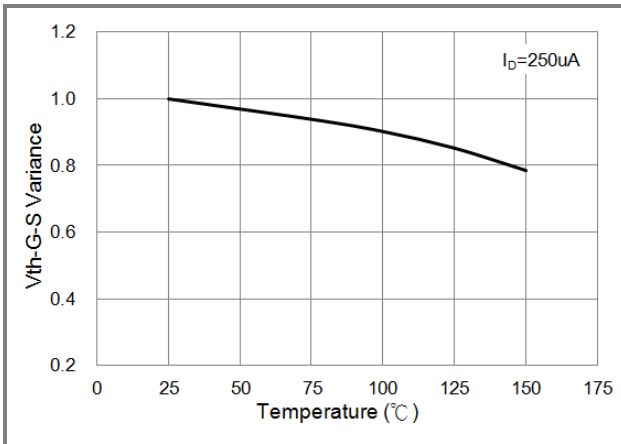


Fig.9 Threshold Voltage Variation with Temperature

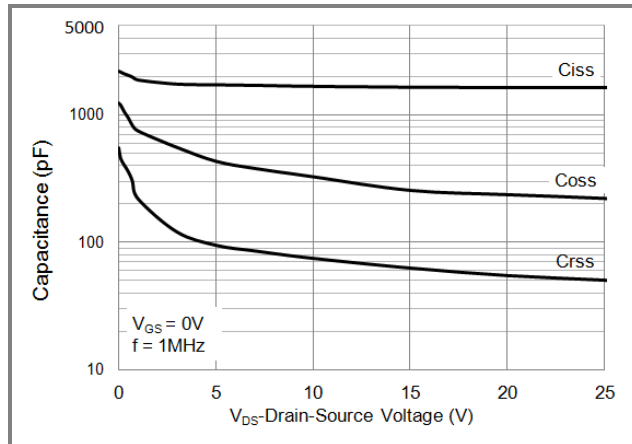


Fig.10 Capacitance vs. Drain-Source Voltage

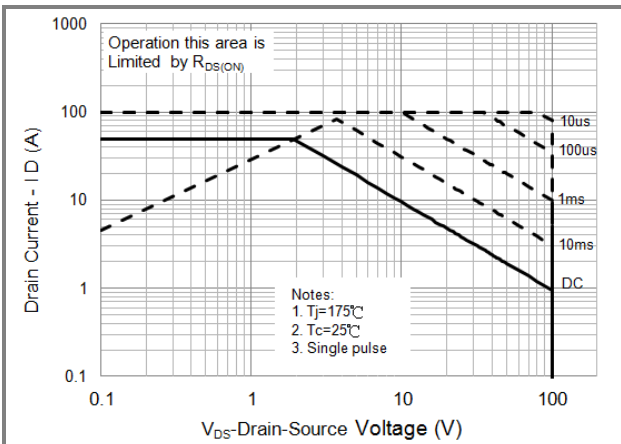


Fig.11 Maximum Safe Operating Area



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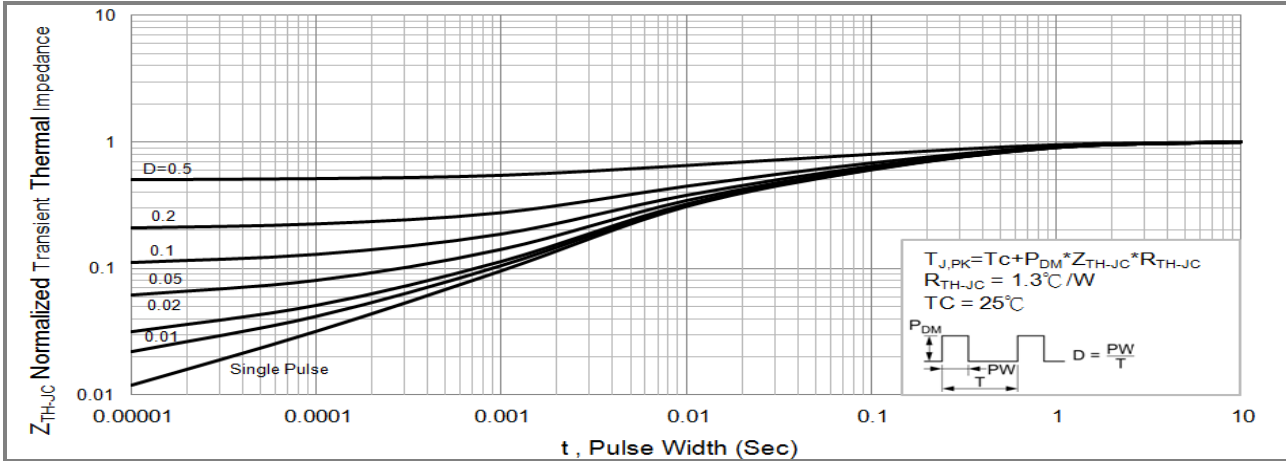
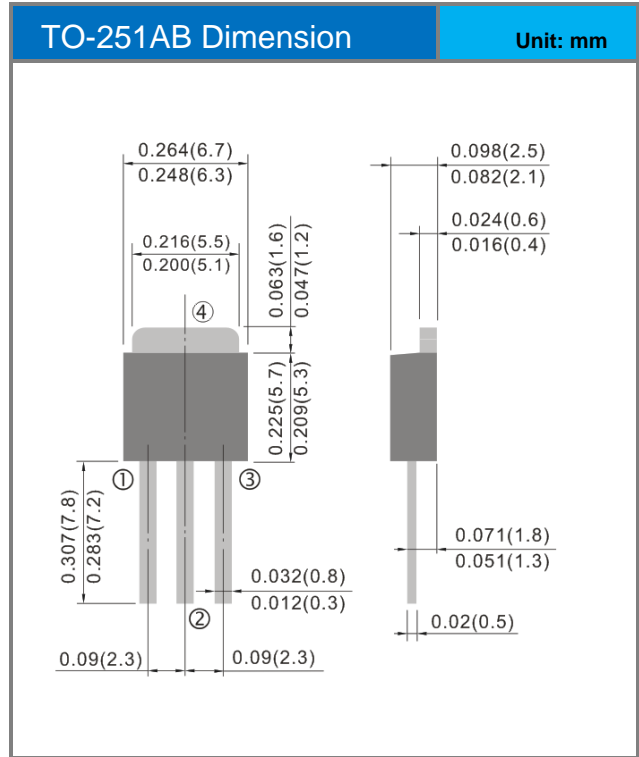
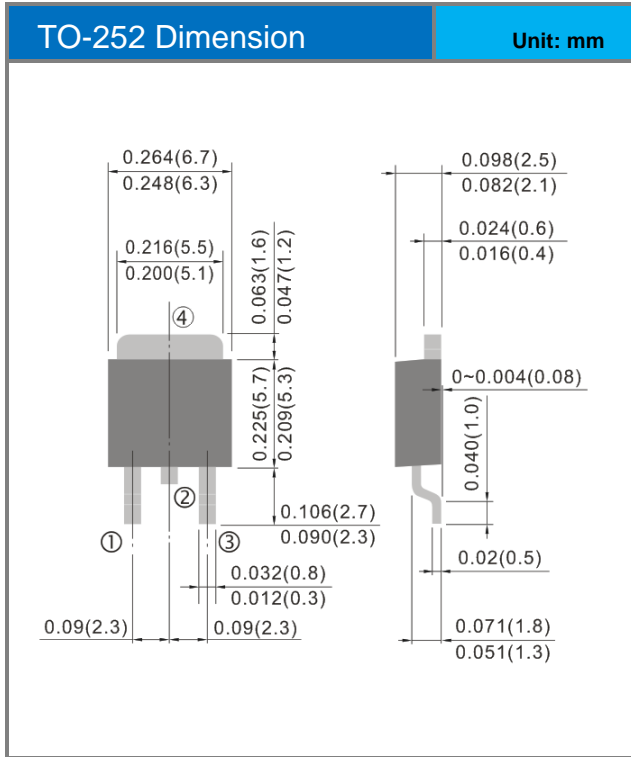


Fig.12 Normalized Transient Thermal Impedance vs. Pulse Width



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Packaging Information



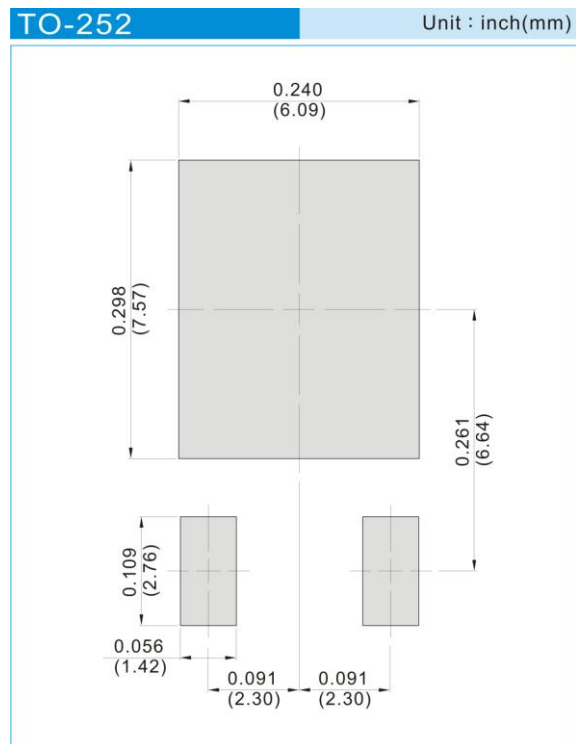


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PART NO PACKING CODE VERSION

Part No Packing Code	Package Type	Packing type	Marking	Version
PJD50N10L_L2_00001	TO-252	3,000pcs / 13" reel	D50N10L	Halogen free
PJU50N10L_TO_00001	TO-251AB	80pcs / Tube	U50N10L	Halogen free

MOUNTING PAD LAYOUT





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